PRESTIGE THERMAL ENERGY

PTE

Advanced Thermal Conversion of MSW, Biomass and Low Value Feedstocks to Electricity and Fuels

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PTE & TECHNOTHERM - SECOND GENERATION ENERGY FEEDSTOCKS & FUELS

PTE & Technotherm are manufacturers of waste conversion equipment committed to providing best of class conversion technologies

- True end of life solutions for plastics and tyres are offered through its plastics to diesel AND scrap tyres to oil technologies
- Both offer net zero waste solutions for Municipal Solid Waste (MSW) and other problematic waste streams
    - Only inerts remain allowing for net zero waste, inerts can be used in road aggregate, brick-making, or combined with resins for particle board
    - Landfill gas (LFG) can be converted to energy until it is eliminated
    - Automated sorting system removes recyclables leaving only biomass

PTE & Technotherm projects convert waste and low value fuels to energy (WTE); clean syngas, electricity, diesel, gasoline, other fuels and products such as high grade oil, and recyclables.

CONVERTING A WASTE LIABILITY TO AN ENERGY ASSET

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WASTE MATERIALS PROCESSED AND END PRODUCTS

MATERIAL PROCESSED	END PRODUCT
Municipal Solid Waste (MSW) Wood Plastic & Tires Agricultural and Animal Waste Organics e-Waste Construction & Demolition Debris Medical & Toxic Waste (Exc. Nuclear) Sewage Sludge and Cake Oily Sludge, Contaminated Oil Heavy Residual Fuels, Vacuum Tank Bottoms	Electricity or Drop in Fuels; ASTM D975 No. 2 ULSD, Gasoline
Recyclable Plastic Non-recyclable Plastic; Agri-film & Plastic, Mixed Plastics, Composites	ASTM D975 Diesel- No.2 ULSD No. 1 Diesel/Kerosene/Naphtha Bunker C Fuel
Scrap Tires	Refinery Grade Oil Recycled Carbon Black (rCB) Recovered Steel Wire

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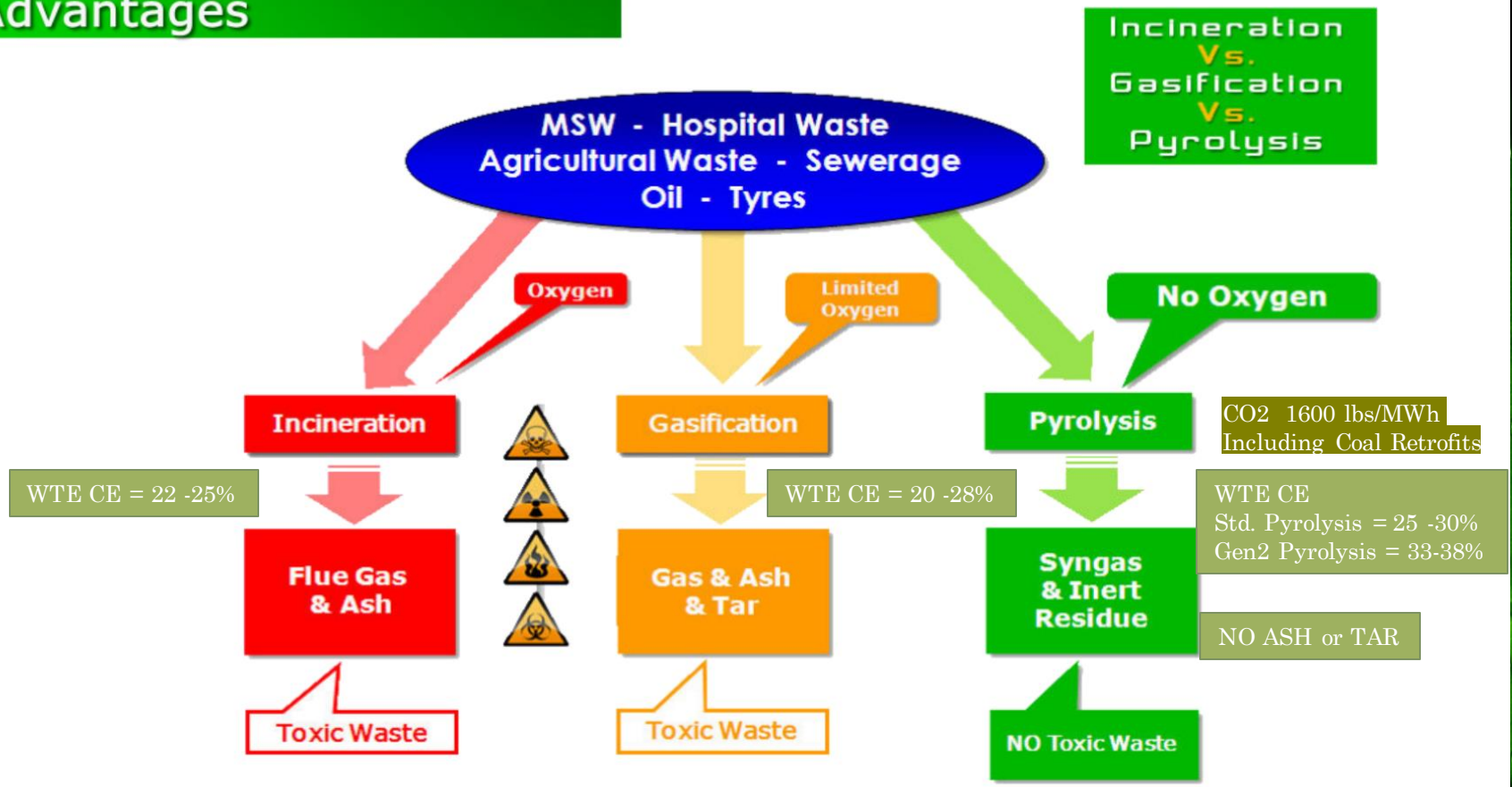
PTE & Technotherm's Pyrolysis Technology Offers Superior Energy & Conversion Efficiency

Increased Waste to Energy Conversion Efficiency ("WTE CE") means less CO2

Advantages



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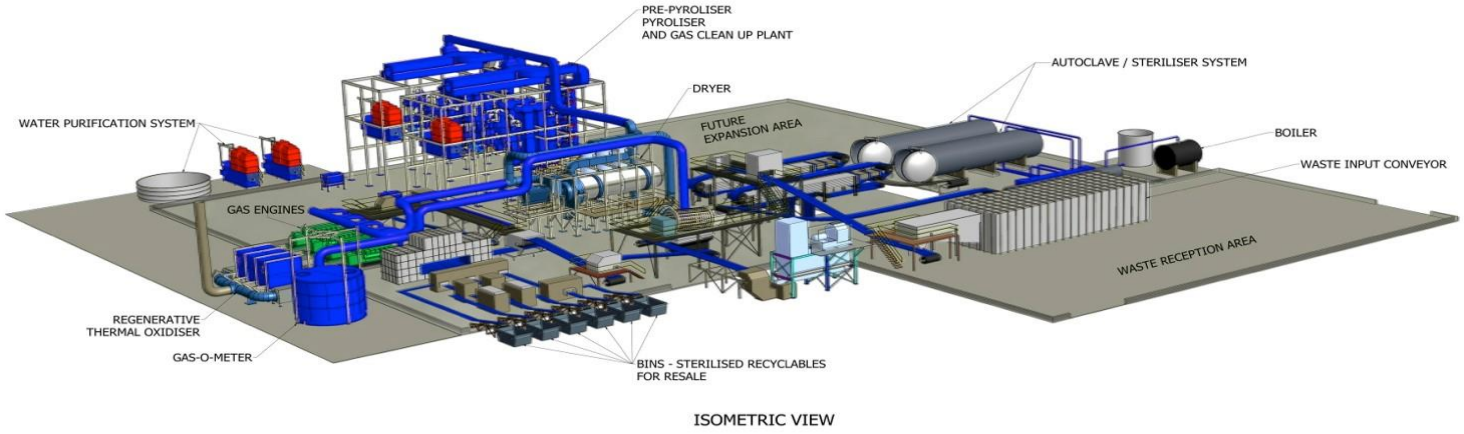
Advanced Recycling and Energy Conversion Technology (AREC)

- Waste is pre-processed, sterilized, and sorted via a fully automated system
- Both Phase and Flash Pyrolysis systems produce high calorific value syngas that is cleaned and converted to electricity or a drop in fuel.
- Single stack stack emissions < Federal and California Air Quality Standards.



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Emissions meet or Exceed Both US EPA and CA Regulations

Continuous Emissions Monitoring Equipment on Exhaust Stack (sole point of emissions)

Contaminant	US EPA Primary Limits	California Limits	European Limits	AREC Technology Typical Result NATURAL	AREC Technology Result With Further Abatement
CO (8 hr)	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	50 mg/m^3	Less than 9 ppm	less than 9 ppm
SOx (1 hr)	75 ppb (196 µg/m^3)	.25 ppm(655µg/m^3)	50 mg/m^3	negligible	negligible
SOx (24 hr)		.04 ppm(105µg/m^3)		negligible	negligible
NOx (1 hr)	100 ppb (188 mg/m^3)	.18 ppm (339µg/m^3)	200 mg/m^3	18.7ppm	less than 0.1 ppm
NOx (Ann. Arithmetic Mean)	.053 ppm (100µg/m^3)	.030 ppm (57µg/m^3)			
Dioxins & Furans	0.00003 µg/liter		0.1 ng/m^3	negligible	negligible
Solid Particulates PM10 (24 hr)	150 µg/m^3	50 µg/m^3	10 mg/m^3	100 µg/m^3	less than 10ug/m3
Solid Particulates PM10 Ann. Arithmetic Mean	NA	20 µg/m^3			
Volatile Organic Compounds (VOCs)	0.075 ppm		0.1 ng/m^3	negligible	negligible
Total Organic Carbon (TOC)			10 mg/m^3	negligible	negligible
Hydrogen Chloride (HCl)			10 mg/m^3	negligible	negligible
Hydrogen Fluoride (HF)			1 mg/m^3	negligible	negligible
Lead (Pb)	0.15 µg/m3(rolling 3-mo. avg)	1.5 µg/m3(30-day avg.)	0.5 mg/m^3	negligible	negligible

NOx will be further abated using a catalyst on the engine exhaust and urea in the Re Ox	Particulates can be further abated using a bag house	CO Levels will be <9 ppm by optimizing and monitoring the stoichiometric conditions on all heat input systems	The technology has only limited emissions without further abatement, thus natural result exhibited above	The abatement required is very small compared to other technologies

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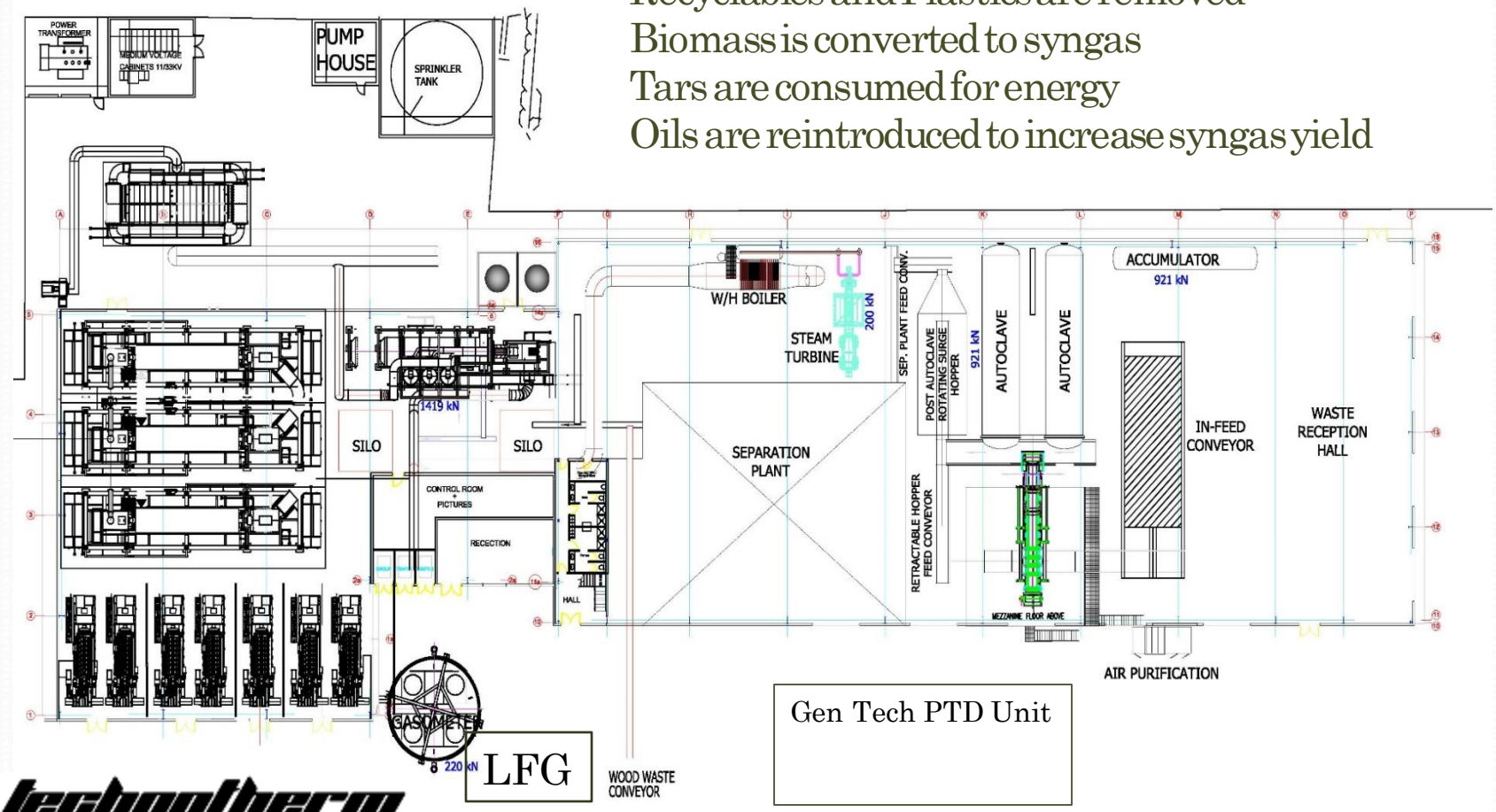
PTE and Technotherm develop end to end systems; front ends vary with feedstock Syngas can be converted to electricity or fuels
Internally generated heat is used and reused & water is recycled

Recyclables and Plastics are removed
Biomass is converted to syngas
Tars are consumed for energy
Oils are reintroduced to increase syngas yield



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Autoclave Technology

- Waste is fed into an autoclave in 29 ton batches, loading @ 70% capacity in 15 minutes
- Pressurized saturated steam (160°C and 5.2 bar) "pressure-cooks" the waste for 50 minutes, resulting in a very high pathogen and virus kill rate
- Steam is stored at 17 bar insuring availability on demand
- System designed to duplex, saving 40% operational energy
- Sealed unit; no emissions or odors
- Deglazes cans, removes labels from bottles and cans, further enhancing resale value

Dryer Technology

- Reduces moisture to increase pyrolyzer efficiency
- Recycled heat keeps drying costs low
- Twin drum design allows loading and unloading from one end
- Sealed hopper and auger for material handling eliminates dust
- Internal tumblers and compression plates homogenize feedstock
- Accurate moisture content achieved through exhaust control

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Pyrolyzer

- Dried cellulose fiber material is thermally decomposed in seconds at high temperature in the absence of oxygen to produce a synthetic gas or “syngas”
- Pre-pyrolyzer, pre-heats material; inner drum is rotated within a heated outer vessel. Outer vessel temperature and speed of rotation allows precise control of exit temperature
- Pyrolyzer unit consists of a totally sealed inner unit surrounded by a heated outer vessel. After initial startup on external fuel, the pyrolyzer is heated to 950° C and kept at temperature using internally generated syngas
- Syngas is proceed in an advanced gas clean-up system

Thermal Oxidizer

- Exhaust gases from the pyrolyser burners, dryers, engines and turbines are sent to the regenerative thermal oxidizers to remove pollutants to a level of less than 16 parts/million
- Energy consumed is approximately 15% of competitive designs
- All volatile organic compounds are removed
- NOx can be reduced by 90%

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Advanced Recycling and Energy Conversion Technology (AREC)
Patented Best of Class Systems for Waste Conversion

- Achieves essentially 100% recycling via a fully automated system
  - No need for separate collections or bins
  - Recyclables are sterile with 98% purity or ~ 2% impurities
- Net Zero Waste: 90-100% landfill diversion; inerts remain for sale (use) or landfill
- Cost effectively utilizes LFG or methane in adjacent landfills until it is eliminated
- Pyrolysis Technology leaving no tar or ash
- Medical waste can be accepted via quarantined conveyor
- Emissions meet or exceed Best Available Control Technology
- Projects can be designed to produce electricity, diesel fuel, gasoline or a mixture of final products, insuring financial viability
- Optional Plastics to Diesel Unit (PTD) converts plastics to ASTM D975 No.2 ULSD
- Systems are manufactured off site & shipped in modules, subject to permitting
  - MSW plant ~18 -24 months from order to commercial operations
  - Gen Tech PTD unit ~ 10-15 months from order to commercial operations
- Produces clean, renewable, low carbon fuels and electricity from waste
  - 98% expected availability with a guarantee of 90% up time

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